

Claims

1. A method for generating a plurality of noise-deteriorated images from an image displayable on a computer display for deterring unauthorised reuse of the image,
5 the method comprising the steps of:
 - transforming an image displayable on a computer display into a plurality of frequency components;
 - generating a noise sequence for each frequency component in the plurality of frequency components, each noise sequence having a plurality of noise numbers;
 - 10 selecting, in relation to a first noise-deteriorated image, a first noise number from each noise sequence;
 - deteriorating each frequency component in the plurality of frequency components using the first noise number from each noise sequence corresponding to each frequency component in the plurality of frequency components to form a noise-deteriorated frequency component in a first plurality of noise-deteriorated frequency components; and
 - 15 transforming the first plurality of noise-deteriorated frequency components into the first noise deteriorated image for displaying on the computer display.
- 20 2. The method as in claim 1, further comprising the steps of:
 - selecting, in relation to a second noise-deteriorated image, a second noise number from each noise sequence;
 - deteriorating each frequency component in the plurality of frequency components using the second noise number from each noise sequence corresponding to each frequency component in the plurality of frequency components to form a noise-deteriorated frequency component in a second plurality of noise-deteriorated frequency components; and
 - 25 transforming the second plurality of noise-deteriorated frequency components into the second noise deteriorated image for displaying on the computer display.
- 30 3. The method as in claim 2, further comprising the step of displaying consecutively the first and second noise-deteriorated images.

4. The method as in claim 3, wherein the step of displaying consecutively the first and second noise-deteriorated images comprises the step of repeating the consecutive display of the first and second noise-deteriorated images.
5. The method as in claim 4, wherein the step of displaying consecutively the first and second noise-deteriorated images further comprises the step of displaying consecutively the first and second noise-deteriorated images in accordance with the display refresh rate of the computer display.
10. The method as in claim 1, wherein the step of generating the noise sequence for each frequency component in the plurality of frequency components comprises the step of generating the noise sequence with a plurality of segments for each frequency component in the plurality of frequency components wherein the arithmetic mean value of each of the plurality of segments tends to zero.
15. The method as in claim 1, wherein the step of transforming the image comprises the step of performing Fast-Fourier Transformation on the image.
20. The method as in claim 7, wherein the steps of transforming the first and second pluralities of noise-deteriorated frequency components comprise the steps of performing Inverse Fast-Fourier Transformation on the first and second pluralities of noise-deteriorated frequency components.
25. The method as in claim 1, further comprising the step of generating a first noise sequence having a first plurality of noise numbers prior to the step of generating the noise sequence for each frequency component in the plurality of frequency component.
30. The method as in claim 9, wherein the step of generating the noise sequence for each frequency component in the plurality of frequency components comprises the step of truncating and modifying the amplitude of the first noise sequence having the first plurality of noise numbers to generate the noise sequence for each frequency component in the plurality of frequency components.

11. A system for generating a plurality of noise-deteriorated images from an image displayable on a computer display for deterring unauthorised reuse of the image, comprising:

5 means for transforming an image displayable on a computer display into a plurality of frequency components;

means for generating a noise sequence for each frequency component in the plurality of frequency components, each noise sequence having a plurality of noise numbers;

10 means for selecting, in relation to a first noise-deteriorated image, a first noise number from each noise sequence;

means for deteriorating each frequency component in the plurality of frequency components using the first noise number from each noise sequence corresponding to each frequency component in the plurality of frequency components to form a noise-deteriorated frequency component in a first plurality of noise-deteriorated frequency components; and

15 means for transforming the first plurality of noise-deteriorated frequency components into the first noise deteriorated image for displaying on the computer display.

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12. The system as in claim 11, further comprising:

means for selecting, in relation to a second noise-deteriorated image, a second noise number from each noise sequence;

25 means for deteriorating each frequency component in the plurality of frequency components using the second noise number from each noise sequence corresponding to each frequency component in the plurality of frequency components to form a noise-deteriorated frequency component in a second plurality of noise-deteriorated frequency components; and

30 means for transforming the second plurality of noise-deteriorated frequency components into the second noise deteriorated image for displaying on the computer display.

13. The system as in claim 12, further comprising means for displaying consecutively the first and second noise-deteriorated images.
- 5 14. The system as in claim 13, wherein the means for displaying consecutively the first and second noise-deteriorated images comprises means for repeating the consecutive display of the first and second noise-deteriorated images.
- 10 15. The system as in claim 14, wherein the means for displaying consecutively the first and second noise-deteriorated images further comprises means for displaying consecutively the first and second noise-deteriorated images in accordance with the display refresh rate of the computer display.
- 15 16. The system as in claim 11, wherein the means for generating the noise sequence for each frequency component in the plurality of frequency components comprises means for generating the noise sequence with a plurality of segments for each frequency component in the plurality of frequency components wherein the arithmetic mean value of each of the plurality of segments tends to zero.
- 20 17. The system as in claim 11, wherein the means for transforming the image comprises means for performing Fast-Fourier Transformation on the image.
- 25 18. The system as in claim 17, wherein the means for transforming the first and second pluralities of noise-deteriorated frequency components comprise means for performing Inverse Fast-Fourier Transformation on the first and second pluralities of noise-deteriorated frequency components.
- 30 19. The system as in claim 11, further comprising means for generating a first noise sequence having a first plurality of noise numbers prior to the generation of the noise sequence for each frequency component in the plurality of frequency component.

20. The method as in claim 19, wherein the means for generating the noise sequence for each frequency component in the plurality of frequency components comprises means for truncating and modifying the amplitude of the first noise sequence having the first plurality of noise numbers to generate the noise sequence for each frequency component in the plurality of frequency components.